

GUIDE FOR SQUADRON MAINTENANCE OFFICERS

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I. THE BIG PICTURE

1. CAP units have been equipped with aircraft to conduct specific duties such as airborne search, transport, and flight orientation. To carry out these duties Civil Air Patrol, Inc. is authorized by the U.S. Air Force to operate and maintain a fleet of 535 powered airplanes, plus 62 gliders. "Civil Air Patrol, Inc." is the registered owner of these aircraft.
2. These aircraft are allocated to geographic regions. In turn, each region allocates those aircraft to its subordinate wings. The allocating process follows a methodical assessment of needs called the "Corporate Aircraft Distribution" formula.
 - a. At present, South Dakota Wing (SDWG) operates 6 powered airplanes ~~and four gliders~~. These aircraft are, in turn, allocated to the flying squadrons by the wing DO ~~according to needs keeping in mind the need to maintain operational readiness at all times~~. The Wing DO then decides (1) at which airfields a corporate aircraft can be employed most advantageously, (2) utilized most effectively, and (3) supported most efficiently. ~~And that's how your squadron wound up with a corporate aircraft to operate — and maintain.~~
 - b. A "gaining" unit typically receives permanent assignment of a corporate aircraft. At that point, the responsibilities fall on that unit to (1) employ the aircraft on as many USAF and/or CAP missions as it can with the aircrews it has; (2) fly the aircraft as much as possible; (3) keep the aircraft in a safe, operable condition; and (4) generate enough revenue (from flight charges) to pay for the aircraft's upkeep.
3. At the National Headquarters level CAP/MXA (Fleet Management—Aircraft) is responsible to make all this happen. The individual charged with day-to-day management of the corporate aircraft fleet is designated the Aircraft Manager.
 - a. In turn, each region designates a counterpart to oversee the utilization and upkeep of its allocated fleet. In turn, each wing relies on a maintenance officer to perform the same management of its allocated fleet.
 - b. CAPR 20-1, *Organization of Civil Air Patrol*, provides the organization structure in which a wing maintenance officer performs these duties. CAPR 20-1 also gives each wing the option of aligning their maintenance officer under the Operations or Logistics staff.
 - c. Within SDWG the Maintenance Officer works for the Director of Operations (SDWG/DO) and is therefore referred to by the office symbol "DOAM".

4. CAPR 20-1 further details where the maintenance officer fits in the squadron-level organization and lists the primary responsibilities of this person.
 - a. Although most of your instructions, technical advice, queries for information, and assistance may come from SDWG/DOAM, you do not work for the Wing Maintenance Officer. That person is not in your chain of command. You work for your squadron operations or logistics officer, depending on how your squadron commander aligns the function of aircraft maintenance within your unit.
 - b. Besides performing duties governed by CAP regulations, you must manage a maintenance effort which complies with Federal Aviation Regulations (FARs). CAP regulations on matters of flying and aircraft maintenance must also conform to FARs... so you will not find yourself “caught in the middle” of conflicting directives.
 - c. You are also the interface between CAP and all the maintenance vendors through whom you must deal to keep your aircraft flying. CAP regulations allow units latitude to perform this vital function. **A list of current vendors used by SD CAP are listed in Quick Reference #.**
5. So that’s where you fit into the scheme for CAP’s management of its aircraft fleet: at the bottom of the totem pole. But the squadron-level maintenance officer position is where “the rubber meets the road”.
 - a. In this position, you have many responsibilities to meet for the upkeep and safeguarding of a very expensive corporate asset.
 - b. At the same time you have significant authority to determine when and where to conduct minor maintenance on your aircraft.

III. RESPONSIBILITIES

A. What exactly is a squadron-level maintenance officer supposed to do? And how do you get such tasks done? Well... the basic responsibilities are laid out in CAPR 20-1, Part III (*Senior Member Position Descriptions*) **Quick Reference #X**. Your position description says an Aircraft Maintenance Officer “exercises staff supervision and coordination of all aircraft maintenance. They shall:

- Make recommendations to the commander for the improvement of the maintenance program
- Ensure that aircraft are painted and identified in accordance with current directives
- Ensure that aircraft are maintained in an airworthy condition in accordance with FAA requirements”

(~~Pretty vague, huh?~~)

B. As you plow through the various governing directives (see Section II) you can start swallowing this job in smaller bites...

1. You have to safeguard and protect your assigned corporate aircraft.
 - You must make sure it's parked on a spot which meets CAPR 66-1 (Quick Reference #X) minimum anchoring requirements; then make sure your unit uses approved tiedown devices and chocks
 - You must make sure it has the covers required by CAPR 66-1; and that the covers are both serviceable and presentable. Quick Reference #X
 - You must make sure it has an acceptable throttle quadrant/avionics lock installed to deter theft of high-value avionics (NOTE: CAP hasn't yet come up with a suitable protection for the "glass cockpit" displays... such aircraft only require a suitable gust lock/throttle quadrant lock)
 - You must make sure the door locks work properly ~~so on-board stuff doesn't get pilfered easily; and that there are controls on who gets issued keys to the aircraft~~
 - You need to periodically inventory ~~the stuff aboard your aircraft to make sure it hasn't disappeared... or doesn't need repair, replacement, or replenishment~~ and ensure equipment is functional.
2. You have to plan scheduled maintenance actions and de-conflict these actions from known flying requirements.
 - "Scheduled" maintenance includes oil changes, 100-hour and annual inspections, "calendar" inspections, washes, corrosion preventive treatments, pitot-static/altimeter/transponder recertifications, and ELT battery replacements... ~~for example~~
 - ~~You may also get enough advance notice to plan refurbishments, painting, equipment alterations, or equipment upgrades~~
3. You have to react to unscheduled (unexpected) maintenance needs and get repairs accomplished as promptly as time, availability of mechanics and shops, and availability of facilities allow. SD Wing DOAM will facilitate
 - Recent CAP policy changes now require units to only use maintenance vendors (FBOs or individual mechanics) which carry sufficient liability insurance coverage
 - SDWG/DOAM is responsible to verify your choice of maintenance vendor carries adequate, current liability insurance coverage
4. You have to purchase maintenance services, performed by individual aircraft maintenance technicians (AMTs), fixed-base operators (FBOs), or certificated repair stations (shops), in order to keep your aircraft

airworthy to standards established by FARs.

- You may require repairs, alterations, installations or removals,

- inspections, functional tests, cleaning or corrosion treatments, or troubleshooting
 - This means you also have to find the right specialist to do the job
 - This means you also need to get the right facility for the job
5. You may have to purchase the parts, components, kits, or materials needed by the mechanic/shop to keep your aircraft airworthy.
 6. When a maintenance task is completed you must make sure all maintenance actions are correctly and completely documented. **This is a critical task.**

(A truism in the world of aircraft maintenance is “If it ain’t documented... it didn’t happen!”)

- If you request maintenance from a mechanic the completed actions must be entered in appropriate maintenance logbooks. (Usually an aircraft will have separate logbooks for airframe, powerplant, propeller, and radio/avionics.) **Log books are kept in the cargo hold.**
- If the task involves new or replaced equipment, or modification, you must also make sure the unit receives appropriate FAA- required documents from the manufacturer or repair station... such as “airworthiness” certificates for manufactured parts; “serviceable” tags for overhauled/repaired parts; or “major repair/alteration” approval documents.

(You have help. FAR 43.9 addresses the “content, form, and disposition of” such maintenance entries. FAR 43, Appendix D further describes the scope and detail of items to be included in annual and 100-hour inspections. For instance...)

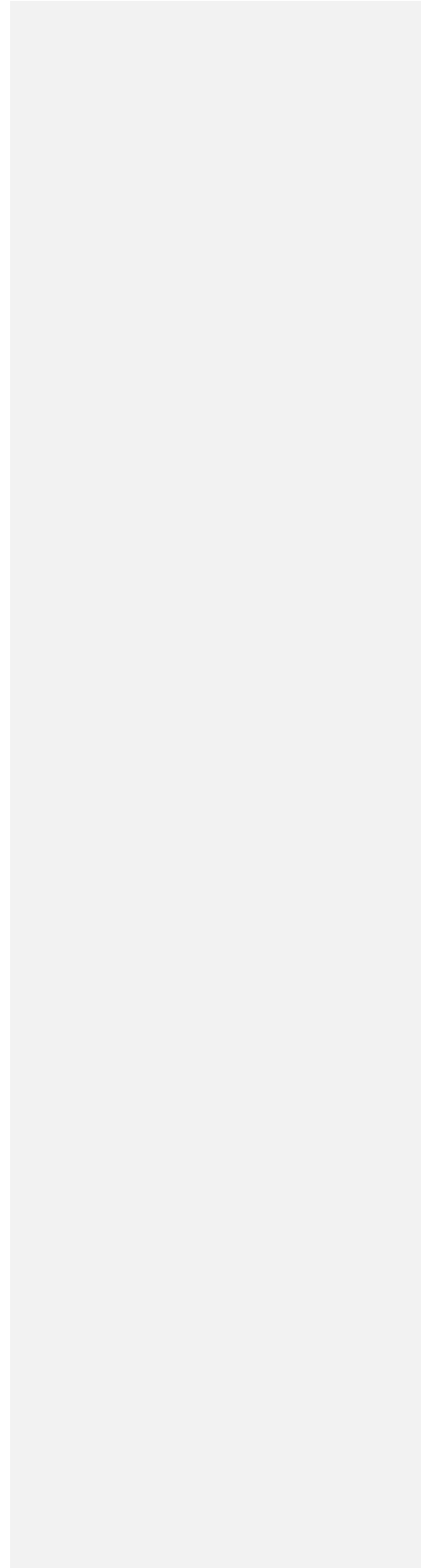
- **Oil changes** must cite the authority; the oil type and quantity used; and any other actions taken related to the event (such as oil filter replaced, oil screen cleaned, oil sample taken...).
- **Inspections** must be performed “in accordance with” a cited FAR or manufacturer’s publication.
- **Time-changes** (such as ELT batteries) must document actions taken; specify the make/model/part number of the new item; and list the item’s expiration date or next-due event time.
- **Airworthiness Directives or Service Bulletins** must cite the designation of the AD or SB; the method of accomplishment; and the results if it’s an inspection action. If it’s a recurring AD or SB the entry must also show the date or tachometer reading when next due.
- **Parts or appliance replacements** must cite the specific actions taken; cite the technical data used; specify

make/model/part

number/serial number to positively identify the replacement component; and identify any functional or operational checks due before the aircraft can be returned to service.

- **Repair actions** must identify what was repaired and by what method the repair was accomplished. Functional checks (if required) must be documented, with their results. Any parts or hardware used must be identified (although if the list is lengthy they may be documented on the shop's/mechanic's work order or invoice, and the work order just referenced in the logbook entry).
- **All maintenance entries** must include the date and tachometer reading – or total time airframe (TTAF) when the action was taken. Most (but not all) actions require an entry that the aircraft (... or prop, or engine) was returned to service. All entries require the signature of the certificated mechanic (AMT) or inspector (IA) or repair station employee who is authorized by FAR 43 to make such entries.

7. You may also have to purchase parts, equipment, tools, materials, and supplies needed by your squadron to keep your aircraft clean and presentable for CAP's "customers".
8. You may also have to collect revenues from "nonreimbursed" flying; deposit such income to the Wing's Aircraft Account; and request payment for your vendors. These duties may be allocated to others in your squadron at the discretion of the commander. See Section VI for more details.
9. You have to control maintenance-related costs to insure your unit's Aircraft Account doesn't run out of money. At the very least...
 - decide what maintenance must be done now to keep the aircraft flying
 - decide what maintenance should be done, at a later time, to keep the aircraft flying
 - decide what maintenance would be nice to do... time and money permitting
 - decide what maintenance may cost more than the improvements (or enhancements) are worth
10. You have to collect a lot of information and data to submit several periodic reports to higher headquarters; or to update internet databases. See Section IX for more details.
11. From time to time you may get tasked to collect data, change a procedure, assess your aircraft's paint or interior condition, verify



compliance with an AD or SB, or otherwise scurry around to get answers for someone else.

12. You should periodically examine how well you are doing. Try the Subordinate Unit Inspection Guide, Tab C-4, *Aircraft Management*. It's available to download from the CAP/IG web page at http://level2.cap.gov/visitors/programs/inspector_general/ig_inspections.cfm ; then click on the "SUI Guide" hypertext link.

IV. AUTHORITIES

A. A founding principal of effective management is that **AUTHORITY MUST BE COMMENSURATE WITH RESPONSIBILITY.**

1. As a squadron-level maintenance officer, CAPR 20-1 delegates the authorities you need to meet assigned responsibilities.
 - Through your unit commander you will be empowered to "ground" the corporate aircraft should you determine its condition warrants being removed from service
 - You are further designated the authority to report your aircraft "operational" when it's returned to service by FAA-certificated mechanics. The SDWG Supplement to CAPR 66-1 identifies you as the person who will report changes to the status of your aircraft to higher headquarters.
 - Your signature is required on some recurring reports, to signify the report information is legitimate.
 - Since you are responsible for meeting the unit's maintenance-related expenses, you also are the focal point for determining the hourly flight charges to be collected for "nonreimbursed" flying with your aircraft.
 - You will inherit the keys for your assigned aircraft avionics lock, hangar doors (if applicable), and any equipment the unit possesses for support of the aircraft. You will likely become the issuer of keys to new aircrew members.
2. You will also discover you have broad latitude to decide what, when, where, and how to get maintenance done... by default. (Hardly anyone else in your squadron wants this job; nor understands what must be done; nor how to get it done.)
3. As you gain understanding of the CAP aircraft maintenance program you will gain "expertise". And with "expertise" comes deferral to your decisions (on matters of aircraft maintenance and often aircraft finances). Learn your job well, become successful at it, and you will discover you now have even more latitude to do what's best for your aircraft and your squadron.

B. The squadron-level maintenance officer position is a lot of work... but the job can be exhilarating!

V. TERMS AND EXPLANATIONS

To perform maintenance successfully and maximize your unit's aircraft availability, you must know the languages of "maintenance" and "finance". You don't have to be fluent... but you do need familiarity with a certain minimum vocabulary of terms.

1. Aircraft Status: **DOWN** vs **UP**. These are slang terms. They refer to an aircraft's availability – either out of service ("down" for maintenance) or serviceable ("up" for flying). Note that an aircraft must be serviceable to be "up"; but can be either serviceable or unserviceable when it's taken "down" to perform maintenance or inspections or alterations or refurbishments.
2. **MAINTENANCE** vs **PREVENTIVE MAINTENANCE**. These terms come from FAR Part 43 and are used to establish who is authorized to perform tasks under each of these definitions. The significance for a unit maintenance officer is that a certificated mechanic or repair station is required to perform "maintenance"; while an owner/operator (that's you) can perform "preventive maintenance" as listed in FAR Part 43, Appendix A. (At least, those tasks now approved by NHQ CAP policy memo.)
3. **INSPECTING, ALTERING, MODIFYING, REPAIRING, REBUILDING, SERVICING, CLEANING, TESTING**. These are all specific kinds of tasks under the general description of "maintenance". FAR Part 43, Appendix A establishes which tasks, on which parts of an aircraft, may be performed by an owner/operator.
4. **MAINTENANCE LOGBOOKS, WORK ORDERS, INVOICES, CONDITION TAGS, EQUIPMENT LISTS**. All these documents serve to record some aspect of maintenance performed on your aircraft or its components. Thorough records-keeping is absolutely essential.
5. **AIRWORTHINESS DIRECTIVES** vs **SERVICE BULLETINS**.
"Airworthiness Directives" (ADs) are issued by the FAA; while "Service Bulletins" (SBs) are issued by the manufacturer of the component affected. Both are designed to alert the aircraft owner/operator to a change... made either to the component or to the way it's operated, inspected, repaired, serviced, or tested.
 - a. **ADs** are normally issued to improve safety-of-flight conditions; and require mandatory compliance. The FAA also issues Special Airworthiness Information Bulletins and Unapproved

- Parts Notifications... which are not mandatory compliance.
- b. **SBs** may be issued by a manufacturer to correct a deficiency in the part or offer an enhancement to the original part. They will typically label their SB as either “optional” or “mandatory”. Since CAP operates its aircraft under FAR Part 91 rules SBs are not considered mandatory by the FAA... so they will usually declare that the old (or unmodified, or uninspected) part will become “unserviceable” after a specified period of time.
 - c. Within CAP, the Aircraft Manager (described later on) determines which “mandatory” SBs CAP will choose to comply with; and notifies wings to accomplish such SBs.
6. **CALENDER vs TIME** inspections. FAA terminology. Corporate aircraft require several recurring inspections. The interval between inspections is measured either by elapsed days/months (“calendar” intervals) or elapsed engine tachometer readings (“time” intervals)... not Hobbs meter readings.
7. **STC vs STA vs PMA vs Unapproved Part vs TSO**. These are also FAA terms.
- a. **“Supplemental Type Certificates” (STCs)** are sought from the FAA by manufacturers or repair stations or even individuals so they may modify or alter or enhance an aircraft/engine/appliance to some new configuration with new operating parameters acceptable to the FAA and useable on the original aircraft or engine or appliance. The “STC holder” owns the technical data for an STC as proprietary information. (If CAP wants to install an STC, they have to purchase it from the STC holder.)
 - b. **“Supplemental Type Approvals” (STAs)** are sought from the FAA by manufacturers for spiffy new components they have devised and want to sell to you for your aircraft.
 - c. **“Parts Manufacturer Approvals” (PMAs)** are sought by other parts manufacturers from the original manufacturer so they may continue to sell the same part to customers. “PMA’d” parts insure the item meets the same technical specifications and requirements that the original part did (when it was approved by the FAA).
 - d. An **“unapproved part”** is any item for which its manufacture or repair cannot be traced to its source of production or source of repair, through documentation approved by the FAA.
 - e. A **“Technical Standard Order” (TSO’d)** component does not require an STC because it meets a set of stringent design, manufacture, and performance “standards” established by the FAA for several classes of components to insure such items meet all airworthiness standards detailed elsewhere among FARs. (Most avionics components, tires, batteries, restraint harnesses --as examples -- are manufactured to conform to a TSO.)

8. **MAJOR** maintenance vs **MINOR** maintenance. These are CAP-coined terms, used to establish the source of payment. (The terms differ from FAR Part 43 uses of “major” and “minor” repairs.)
 - a. “MAJOR maintenance” defines a specific list of maintenance tasks performed on specific kinds of aircraft parts, airframes, engines, or propellers. Maintenance tasks which fall under CAP’s definition are eligible for payment from USAF appropriated funds... rather than out of CAP revenues. These tasks are spelled out in CAPR 66-1.
 - b. “MINOR maintenance” – by default – covers every other maintenance task performed on aircraft.
9. **REIMBURSABLE** vs **NONREIMBURSABLE** maintenance costs. CAP-imposed definitions. Used to identify which kinds of maintenance-related costs may be reimbursed or paid directly from the wing’s AIRCRAFT ACCOUNT as a “minor maintenance” expense; or shouldered by the individual unit from their GENERAL account or SQUADRON AIRCRAFT account because the cost is not eligible for “minor maintenance” funds. (The use of wing “minor maintenance” funds are spelled out – not too clearly – in CAPR 173-3.)
10. **REIMBURSED** vs **NONREIMBURSED** flying. More CAP definitions, used to identify the source of revenue when using corporate aircraft.
 - a. “Reimbursed” flying means a recognized agency with an approved letter of agreement (LOA) or memorandum of understanding (MOU) with CAP, will “rent” the corporate aircraft and pay for its flight hours (and some related expenses) at rates set by NHQ CAP.
 - b. “Nonreimbursed” flying refers to all other uses of a corporate aircraft. Since all Hobbs meter time must be expensed by the unit (that is, accounted for) it falls on the unit which maintains the aircraft to collect payments generated by “nonreimbursed” flying, at rates which the unit is authorized to establish.
11. **MISSION SYMBOLS** vs **MISSION NUMBERS**. Although this is not directly a “maintenance” issue, it always causes confusion among those who must pay for the use of a corporate aircraft.
 - a. A “mission symbol” is an accounting mechanism for CAP to track and tabulate how its corporate aircraft are being employed. “Mission type” – “A”, “B”, “C”, or “L” – also define who pays for the hours. Mission symbols are found in CAPR 60-1, Atch 10.
 - b. A “mission number” is assigned for a one-time specific use of corporate aircraft in support of USAF or CAP flight taskings; and is another accounting mechanism. It also is used to insure the plane and aircrew are protected under the Federal Tort Claims

Act; and aircrew members are eligible for state Workers Compensation.

CAUTION: Just because a flight has a mission number assigned does not guarantee the flight is “reimbursed” flying i.e., that someone other than the pilot member is paying for the flight hours or avgas. Better be sure.

10. I just have to throw in this acronym... **SOAP** is a Spectrometric Oil Analysis Program. The trace-metal contents of your engine's oil can be an early indicator of unusual or excessive component wear... and therefore a precursor to an engine failure.
 - a. SOAP sampling is required at each oil change during the life of your plane's engine.
 - b. At squadron level, you must retain the analysis results with your engine's maintenance records.

VI. AIRCRAFT MAINTENANCE FUNDS

A. As a consequence of CAP's pursuit of an “unqualified” audit, recent changes to CAPR 173-series regulations resulted in consolidation of former squadron-level aircraft funds from squadron control to wing control under “Central Banking”. SDWG now pays all maintenance-related expenses from a consolidated wing-level Aircraft Account.

1. Squadrons may initiate a requirement for funds by generating an Aircraft Purchase Order (ACPO); SDWG/DOAM then validates all requests for payment.
2. “Reimbursed” flight revenue is collected from agencies by NHQ CAP and is then paid to each wing. This income remains ‘invisible’ to squadrons.
3. “Nonreimbursed” flight revenue must be collected, deposited, and reported by the squadron which is permanently assigned the corporate aircraft.

B. South Dakota Wing must account for all revenues generated by each corporate tail number. The squadron maintenance officer is often the focal point for both collecting aircraft revenues and obligating maintenance-related expenses. (But you should rely on your squadron's finance officer to help with these tasks.)

C. Your understanding of the way money moves within CAP is important. You need to learn about:

- CAP's various sources of money
- Collecting revenues

- Paying expenses

Once you understand these mechanisms, you can then see how your squadron's flying hours, "flight charges", and nonreimbursable costs relate to each other. (And how you can manage them so to keep money in the bank.)

D. However... you won't find the answers in this guide. The management of aircraft-related CAP money is important enough to merit a separate publication, *Guide to CAP's Aircraft Maintenance Funds*. It's a companion to this guide; and is available on the SDWG Publications web page as **SDWGG 66-3**. **Quick Reference #X**

(See Figure 5, *The Aircraft Cycle* to better understand how missions generate flight hours; flight hours beget revenue; revenue pays for maintenance; maintenance produces aircraft availability; and availability allows us to participate in more missions.)

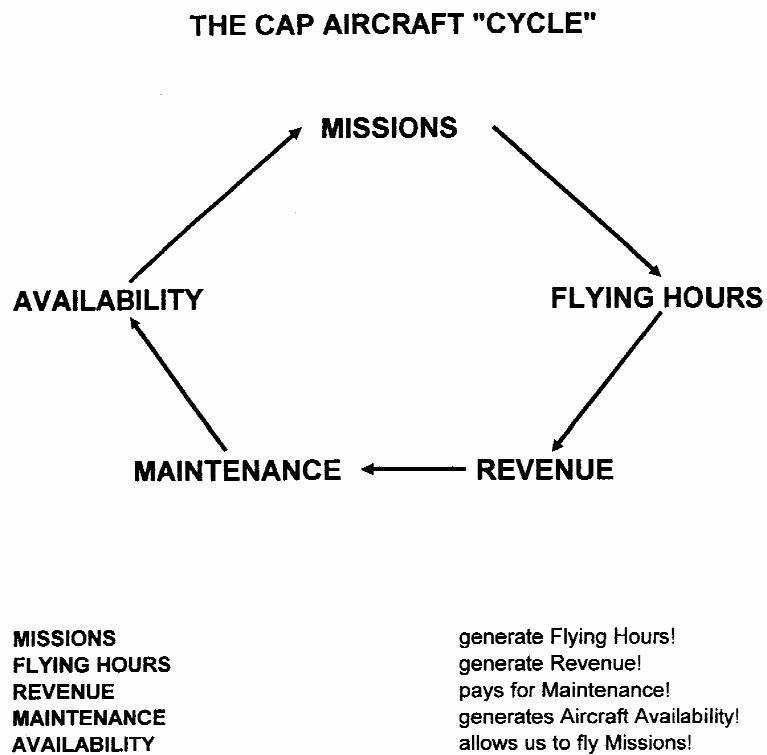


Figure 5.

VII. REPORTS AND FORMS

A. The following forms are used to report information or data which involve a corporate aircraft:

1. **CAP Form 18(E), *Operations Monthly Activity Report***
 - use is directed by CAPR 60-1, para 2-7
 - used to report monthly corporate aircraft flying hours by tail number
 - “template” form; submitted via internet through a NHQ CAP web site
 - each individual maintenance officer creates their own user ID and password; SDWG/DOAM assigns reporting permissions
 - several products (reports) are available for squadron use
2. **CAP Form 26, *Safety Improvement or Hazard Report***
 - use is explained in CAPR 62-1, para 2.c
 - general-use “template” form is available on-line; used to report hazardous operations or dangerous conditions
 - may be submitted by anyone, anytime, to lowest level where the problem can be addressed or corrected
 - may be handwritten; submitter doesn’t have to identify them self
3. **CAP Form 37A, *Shipping & Receiving Document for Aircraft***
 - use is explained in CAPR 67-1, Chapter 5
 - used by SDWG/DOAM and units to account for corporate aircraft transfers; also to list installed equipment items
 - updated any time new equipment is installed or removed
 - unit commander or supply officer must sign
4. **CAP Form 71, *Aircraft Inspection Checklist* (Quick Reference #X)**
 - use is explained in CAPR 66-1, para 8.f
 - used at all echelons to document current condition of corporate aircraft as well as status of its maintenance records, inspections, and compliance with CAP-directed requirements
5. **CAP Form 78, *Mishap Report Form***
 - use is directed by CAPR 62-2, para 5
 - used to report any kind of incident/accident
 - now an on-line “template” form which goes directly to NHQ CAP
 - typically generated by the unit safety officer; has 48-hour suspense
6. **CAP Form 79, *Mishap Investigation Form***
 - use is directed by CAPR 62-2, para 6
 - documents any investigation and recommendations for corrective actions

- form is automatically generated as part of the Form 78
- generated by the investigating officer; submitted via internet

7. **CAP Form 99, *Flight Release Log***
 - use is detailed in CAPR 60-1, Chapter 4
 - a monthly summary of flight releases; now generated automatically via internet when a flying mission is completed in WMIRS (described in Section IX: Electronic Reporting)
8. **CAP Form 108, *Payment/Reimbursement Document for Aviation/Automotive/Miscellaneous Expenses***
 - use is detailed in CAPR 173-3, para 2
 - used to document reimbursable expenses related to a corporate aircraft used on 'reimbursed' missions
 - now generated automatically via internet when a flying mission is completed in WMIRS
 - claims may be submitted by either individual members or units
9. **CAP Form 132, *HSI Claim Form***
 - use is detailed in CAPR 900-6, para 6
 - used to claim expenses payable by NHQ CAP from 'major maintenance' funds or from a member's insurance carrier, for repairs as a result of accidental loss or damage to corporate aircraft
 - filled out by SDWG/DOAM and submitted to CAP/LG for approval
10. **CAP Form 176, *Aircraft Major Maintenance Reimbursement Request***
 - use is explained in CAPR 66-1, para 12
 - a "template" form, filled out and submitted by SDWG/DOAM to request appropriated funds be used to purchase "major maintenance" repairs or upgrades for a select list of tasks
 - must be submitted and approved by CAP/MXA before a unit may purchase parts or obligate work
12. **Aircraft Information File (AIF) binder.**

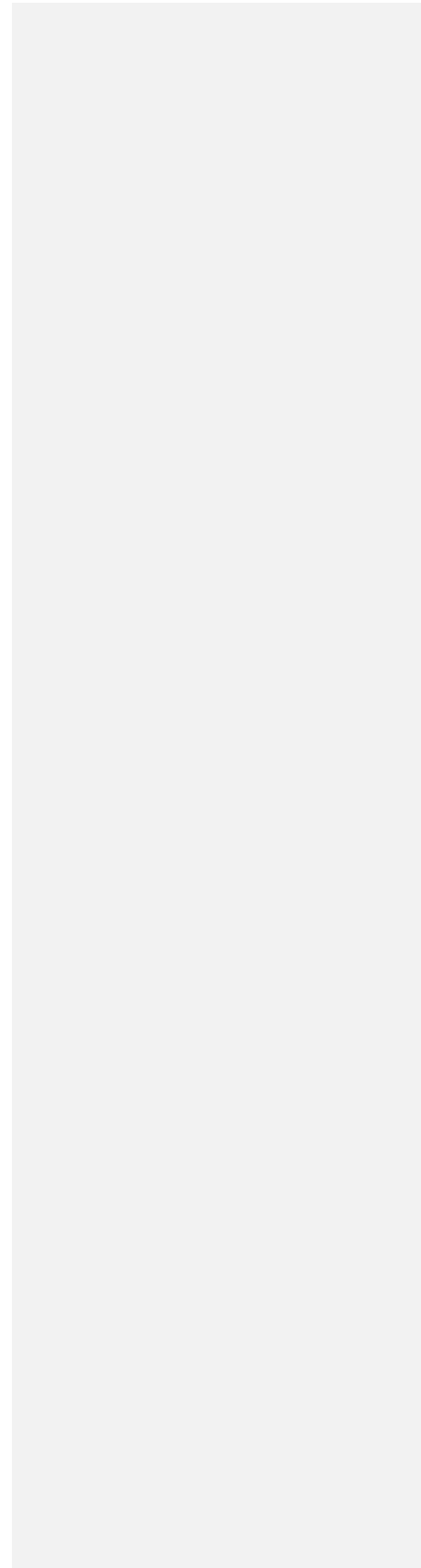
NHQ CAP instituted nationwide "standardized" content for this binder. CAPR 60-1, para 2-14 requires an AIF binder be carried aboard each corporate aircraft on every flight.

-- The content for the tabs of this binder can be viewed at <http://www.cap.gov/visitors/members/operations/index.cfm?nodeID=6850&audienceID=4> . Quick Reference #X.

-- Historically in this Wing, the chore of maintaining the content of the plane's AIF binder has fallen on the squadron maintenance officer – even though this duty is not tasked specifically in any regulation or policy memo...

B. Within South Dakota Wing, the following forms are in use:

1. **SDWG Form 11, *Request for Payment***



- use is explained in SDWG Policy Letter #21, *Wing Financial Policy*
 - “template” form available; may also be filled out by hand
 - submitted for payment of a wide variety of unit expenses, to include aircraft-related costs not eligible for payment from the wing’s Aircraft Account as “minor maintenance”
 - “request” may be signed by anyone; but must be approved by unit finance committee member or commander depending on amount of payment
2. **SDWG Form 52, Corporate Aircraft Flight Charges Questionnaire**
 use is explained in SDWG 11-1, Chapter 11; and in the SDWG Sup 1 to CAPR 66-1, para 14.b.4)
 used to report current flight hour charges which each squadron establishes for use of corporate aircraft on “nonreimbursed” flights available as a “template” form on the SDWG Publications web page submitted any time the unit changes its rates
 must be signed by either the unit finance officer or commander
3. **SDWG Form 66, Corporate Aircraft Storage and Mooring Report**
 use is detailed in SDWG 11-1, Chapter 11 and in the SDWG Sup 1 to CAPR 66-1, para 15
 used to verify compliance with CAPR 66-1 mooring requirements submitted whenever a plane’s parking arrangement or location is permanently changed
 available as a “template” form on the SDWG Publications web page must be signed by either the unit operations officer or commander
4. **SDWG Form 125G, Glider Preflight Safety Inspection Guide**
~~— use is detailed in SDWG Sup 1 to CAPR 62-1, para 13, Atch 5~~
~~— used by “designated safety representative” at activity sites to inspect gliders and tow equipment prior to its participation in the activity~~
~~— also used by SDWG/DOAM to inspect gliders for condition and compliance with any CAP directed requirements~~
~~— at activity sites, this form is submitted through the activity safety officer to the activity commander~~

NOTE: Most formatted reports (forms) may now be transmitted by e-mail as attached scans or by fax to save time... unless they require attached documents or originals. Other one-time reports may be tasked from time to time; formats (if needed) will be provided by the requestor.

NOTE: Ongoing reporting of aircraft status and maintenance events are tracked by electronic input to selected pages of the on-line Wing Management Utilities (WMU) described in Section IX.

C. As a maintenance officer, you will also need some familiarity with FAA-required forms and related documents:

1. **FAA Form 337, *Major Repair and Alteration***
issued to evaluate repairs and/or alterations to airframes, engines, propellers, or appliances
used to certify that such repairs/alterations conform to FAR Part 43 requirements and procedures
must be signed by a certificated mechanic or repair station; and must describe the work that was done
it is now submitted directly to the FAA national Aircraft Certification Office rather than to your nearby Flight Standards District Office (FcaO), by whomever generated the form
the original must be retained permanently with the aircraft's records
2. **FAA Form 8010-4, *Malfunction or Defect Report***
designed to collect information on any general aviation aircraft components which fail, or fail to perform as advertised, for any reason
may be submitted by anyone, to the nearest FcaO
reports can be made via Internet; the template form can be accessed at <http://av-info.faa.gov/icar/> through the "Malfunction or Defect Submission Form" hypertext link on that page.
3. **FAA Form 8050-3, *Certificate of Aircraft Registration***
a required document; the original must be aboard the aircraft for it to legally operate in the National Airspace System of the U.S.
issued in the name of Civil Air Patrol, Inc. as "owner"
4. **FAA Form 8100-2, *Standard Airworthiness Certificate***
establishes airworthiness of the make, model, and serial number of an aircraft; certifies this specific aircraft conforms to its "type certificate"
specifies which "category(s)" in which this aircraft may be operated (all CAP powered aircraft are approved for Normal category flight operations)
a required document; the original must be aboard the aircraft for it to fly in the National Airspace System
5. **FAA Form 8110-2, *Supplemental Type Certificate***
used by the FAA to certify that new installations or modifications meet airworthiness requirements and are acceptable changes to the type certificate for your aircraft
STCs will include installation/modification instructions, needed drawings, parts lists, operating limitations, applicability, and any

operating instructions needed to supplement the Aircraft Flight Manual (AFM)
“operating supplements” must be filed as part of the AFM

6. **FAA Form 8120-11, *Suspected Unapproved Parts Notification***
used to notify the FAA of a suspected unapproved or counterfeit aircraft component
may be submitted by anyone, directly to the FAA System & Surveillance Analysis Division
notification can be made via phone or e-mail; or mail/fax a fill-in form available at <http://forms.faa.gov/forms/faa8120-11.pdf>
7. **FAA Form 8130-3, *Airworthiness Approval Tag***
filled out by the manufacturer or repair station to certify the part or appliance you just received was manufactured in accordance with FAR Part 21 approved parts specifications
also filled out by mechanics or repair stations to certify the part or appliance was repaired/overhauled in accordance with the manufacturer’s specifications... and is serviceable
8. **FAA: *Type Certificate Data Sheet***
issued for a specific make, model, and series of airframe, engine, or propeller
provides design, performance, and operating specifications for the end item described
additional “notes” may describe permissible operating limitations and the accessories/parts approved to be used on/with this end item
will also describe all acceptable variants of the basic item, and what the differences are

D. You also need to know that manufacturers, repair stations, even individual mechanics, produce forms which implement FAA required records-keeping:

1. ***Serviceable Tag or Return To Service Tag***
a locally-prepared document; has no particular format
used by repair stations or mechanics to certify the part you just received was repaired, overhauled, refurbished, serviced, or inspected in accordance with manufacturer’s specifications or with FAR Part 43 accepted practices and methods... and is serviceable
by convention, these tags are always colored yellow
2. ***Weight & Balance Certificates***
a locally-prepared document; has no particular format
may be prepared by any certificated mechanic, IA (inspection-authorized mechanic), or repair station

another required document; becomes part of your plane's AFM; the aircraft cannot fly without current weight & balance information being available to the pilot in command
data must be revised whenever installed equipment is added or removed; or whenever the airframe structure is significantly altered

3. *Maintenance Logbooks*

logbooks follow no particular format or form, but generally must allow for aircraft identification, date of entry, tachometer reading at entry, and space to describe the maintenance actions performed
individual logbooks are normally kept up for the airframe, the engine, the propeller, and radios/avionics
logbooks become a permanent part of an aircraft's records
they're available from several publishers

Are located in the cargo hold.

VIII. WORKING WITH OTHERS

A squadron maintenance officer must interface with many other CAP "players" to insure aircraft maintenance (a) is de-conflicted from flight operations; (b) required maintenance gets done; (c) logbooks get documented; (d) reports get submitted; (e) flight charges get collected; and (f) expenses get paid or reimbursed. This duty position is also the focal point for conducting aircraft maintenance through FAA-certificated mechanics, fixed-base operators (FBOs), and repair stations.

A. Working with fellow squadron members:

1. The Commander – **Col. Mike Beason**
 - assigns duty positions through personnel actions (CAP Form 2a) or published orders (Personnel Authorization)
 - signs and releases many reports and forms
 - issues policies for aircraft scheduling, utilization, maintenance, flight charge collection
 - usually the authority to approve funds expenditures from either the squadron General Account or Aircraft Account
2. Logistics Officer – **Col. Mike Beason**
 - responsible for other squadron assets to include vehicles, facilities, utilities, and supplies/equipment
 - may have oversight for aircraft maintenance and hangar or tiedown rentals
3. Supply Officer - **Vacant**
 - responsible for upkeep of squadron-possessed equipment (other than aircraft or aircraft-installed equipment)

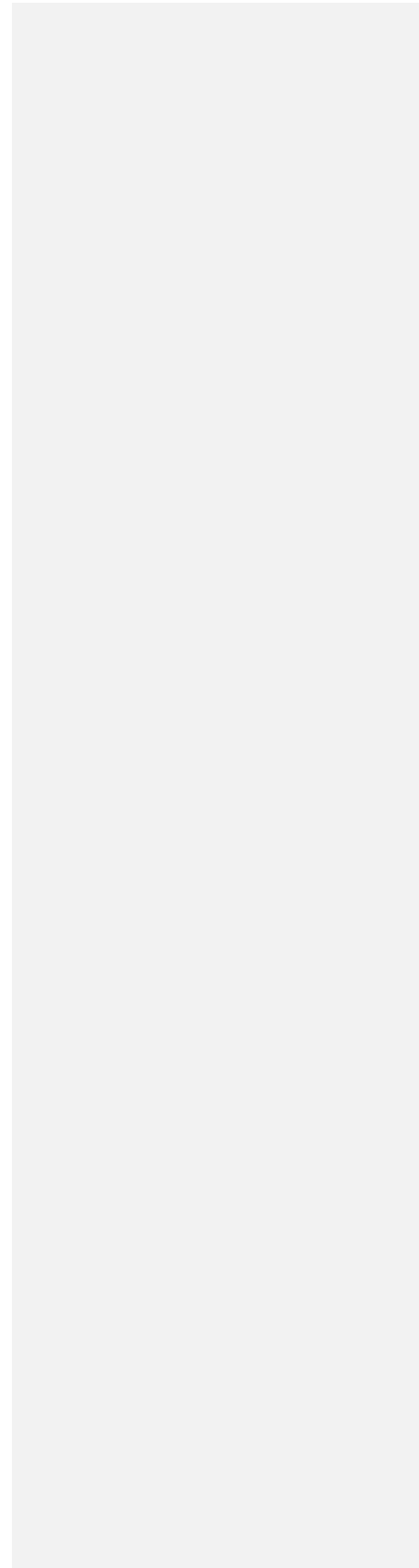
- may sign the CAP Form 37A for 'transfer' or 'update' of aircraft or aircraft-installed equipment
- 4. Finance Officer – **Col. Mike Beason**
 - oversees all squadron accounts; must report all deposited flight charge revenues to Wing
 - helps establish aircraft flight hour charges (SDWG Form 52) and may sign the form
- 5. Operations Officer – **Maj. John Seten**
 - normally responsible for aircraft utilization, flight scheduling, and aircrew qualification
 - may have oversight for aircraft maintenance
 - may sign the CAP Form 66 aircraft mooring report
- 6. Safety Officer – **Maj Mark Huntington**
 - available to assist with mishap reporting

B. Working with Group staff: The Commander

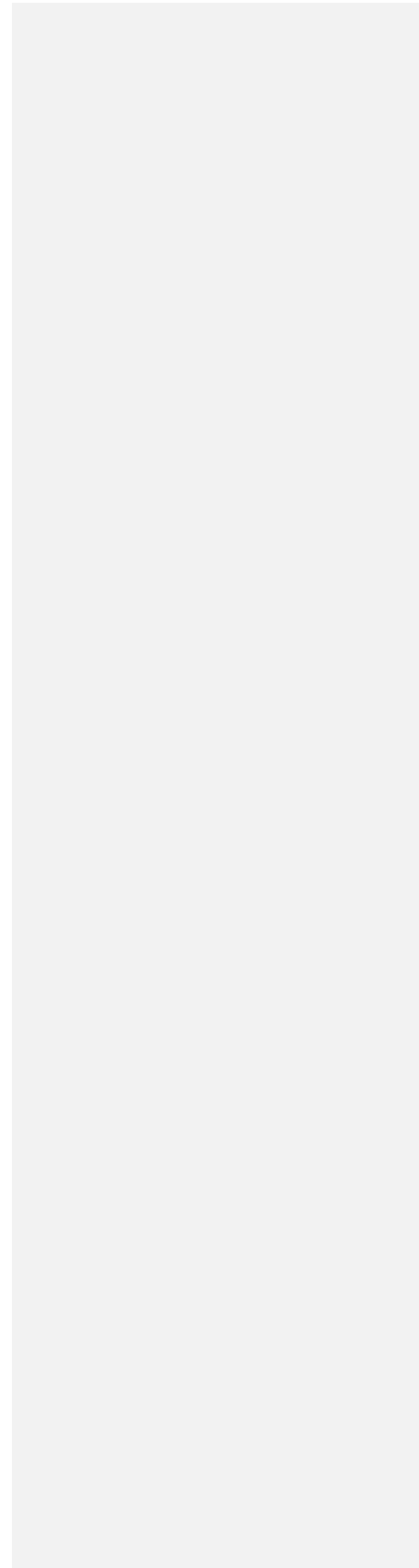
- provides intermediate review of many recurring reports going to Wing
- has say in allocation of corporate aircraft within the group
- may direct aircraft "sharing" between squadrons

C. Working with Wing staff:

1. The Commander (SDWG/CC) – **Col. Mike Beason**
 - has final say on allocation of corporate aircraft within the Wing
 - negotiates receipt/transfer of corporate aircraft into/out of the Wing
 - has signature authority for all real property purchases, leases, or rental to include aircraft hangar spaces or tiedown spots
 - also is the approval authority for any aircraft or aircraft-related donations to the Wing or individual units
 - can set policies to better manage the corporate aircraft fleet
 - approval authority for any Wing-level supplements to parent CAP
 - regulations
2. Director of Operations (SDWG/DO) – **Maj. John Seten**
 - has oversight of the aircraft maintenance program
 - establishes flying mission priorities (among many responsibilities)
3. Aircraft Maintenance Officer (SDWG/DOAM) – **Cpt. E. W. Filler**
 - focal point for all aircraft-related matters within the Wing
 - documents reallocation or reassignment of corporate aircraft
 - manages use of the Wing Aircraft Account funds



- conducts “periodic” inspection of corporate aircraft and their maintenance records
 - selects aircraft for modifications, equipment upgrades, paint, refurbishment
 - may solicit vendors for aircraft parts purchases as well as repairs, alterations, paint or refurb actions
 - validates all maintenance invoices for payment via the Wing’s ACPO system
4. Communications Officer (SDWG/DOC) – **1LT Bill Collister**
- establishes Wing’s Frequency Plan
 - can arrange to reprogram frequencies in aircraft FM radios should they be replaced for maintenance reasons
5. Director of Finance (SDWG/FM) – **Col. Mike Beason**
- controls all Wing funds, to include the Aircraft Account
 - processes all reimbursement requests made via CAP Forms 108; processes all payment requests made via ACPO control numbers; processes all payment requests made via SDWG Forms 11
 - employs a CAP-salaried Bookkeeper to keep track of all revenue and expenditures; and to generate check payments
 - chairs the Wing Finance Committee
6. Director of Logistics (SDWG/LG) – **Col. Mike Beason**
- focal point for non-expendable property (equipment) reporting and accounting (CAP Forms 37-series documents)
 - may advise/coordinate with squadrons for matters involving lease or rental agreements for aircraft tiedowns or hangars, as well as for squadron facilities
 - manages the Wing’s vehicle program through the Vehicle Officer
7. Director of Safety (SDWG/SE) – **Maj. Mark Huntington**
- has responsibility for safe operating practices with the wing
 - involved with all aircraft-related mishap reporting and investigating
8. Information Services Officer (SDWG/IT) – **Cpt. Rick Goeringer**
- designs and maintains the South Dakota Wing web site and its subordinate pages – to include a page for the Aircraft Maintenance Officer, which carries numerous internet links for publications and aircraft-related information
 - maintains the Wing’s Aircraft Purchase Order System (ACPO) and enters new vendor data; resolves discrepancies with individual purchase orders
9. “Incident Commanders”



- will employ individual corporate or member-owned aircraft for emergency services taskings, based on aircraft status and mission equipment capabilities

D. Working with National Headquarters (NHQ CAP):

1. Director of Fleet Management (CAP/MX):
 - oversees resources formerly assigned to CAP/LG (Aircraft and Vehicles)
 - establishes priorities for corporate aircraft purchases and disposals
 - (through the Aircraft Condition Report)
 - approval authority for Major Maintenance requests and Hull Self- Insurance (HSI) claims
 - manages CAP's "contract maintenance" program for aircraft; solicits maintenance vendor contract proposals; administers the approved individual vendor contracts; pays the bills
2. Aircraft Manager (CAP/MXA) – **Dan Daniels/Paul Skinner**
 - provides day-to-day management of CAP's corporate aircraft fleet
 - arranges release of appropriated funds for aircraft Major Maintenance expenditures once approved by MX
 - provides funds for aircraft modernization, avionics or mission equipment upgrades, equipment alteration, and aircraft replacements
 - authorizes avionics component replacements through the Radio Exchange Program
 - can perform parts ordering and shipping; can assist wings with part number research and pricing
 - can arrange transport of end items (such as engines and propellers)
 - may act as intermediary for factory support of new CAP equipment or warranty claims
 - disseminates manufacturer's Service Bulletins to wings, as well as Emergency Airworthiness Directives or Unapproved Parts Notifications
 - authors CAPR 66-1

NOTE: Visit the MXA web page directly to find out a lot more about "Hot Topics", "Airworthiness Directives", "Mandatory Service Bulletins", "Recommended Service Bulletins", and "Forms & Publications". These may be accessed at <http://level2.cap.gov/index.cfm?nodeID=5225>.

3. Director of Finance (CAP/FM)
 - collects all "reimbursed mission" flight revenues and disburses these funds to wings
 - pays maintenance vendors directly for Major Maintenance

actions and contracted services

- helps establish “flight charge” rates for all corporate powered aircraft
- authors CAPR 173-series regulations

E. Working with the Federal Aviation Agency: Your nearest Flight Services District Office (**Rapid City**) **expand with address etc**

- the source for interpreting FAR requirements, Advisory Circular (AC)
- instructions, or Airworthiness Directive (AD) applicability
- source of free publications (to include some ACs)
- maintains listing of all certificated repair stations and designated engineering representatives (DERs) within its geographic area of responsibility
- can advise on approval of FAA Forms 337 (Record of Alteration)

F. Working with various maintenance vendors (businesses):

- parts suppliers and retailers (for aircraft parts, technical publications, tools, kits, equipment, materials, consumable supplies)
- certificated repair stations (for component troubleshooting, repair, alteration or new equipment installations)
- mechanics -- Aircraft Maintenance Technicians (AMTs) and inspection-authorized AMTs (IAs) (for aircraft and engine/propeller inspections, repair estimates, testing, repairs, modifications, alterations, servicing, cleaning, and parts purchases on behalf of the squadron)
- fixed-base operators (FBOs) (for fuel, hangar/tiedown rental, access to wash facilities, access to hangar space, pilot supplies, minor aircraft hardware and parts purchases, and some maintenance actions)
- airport managers (for airfield security and access, fire protection, utilities for squadron facilities, airfield repairs and upkeep)
- banks (for deposit services)

G. Last but not least: YOUR FELLOW MAINTENANCE OFFICERS

(Talk or correspond with them. Many have learned better – or easier – ways to get this Aircraft Maintenance Officer duty accomplished!)

IX. ELECTRONIC REPORTING

NHQ CAP continues to build internet-based data collection and interactive management systems which will give the national staff greater visibility over all aspects of squadron-level and wing-level activities. These systems now include The Flight Activity Reporting System (Form 18)

The Wing Management Utilities (WMU)

The Aircraft Status & Support Resources System (ASSR)
The Wing Mission Information Reporting System (WMIRS)
The Corporate Asset Tracking System (caTS)
E-Services

This part of the Guide will give everyone an introduction to the aspects of each system which involve corporate aircraft. It will also introduce this Wing's tracking and approval system for minor maintenance costs... the Aircraft Purchase Order System (ACPO).

A. The Flight Activity Reporting System, more commonly referred to as the "Form 18", is a monthly input made directly to CAP's National Technology Center (NTC) via Internet to capture flight hours by individual mission symbol, for each corporate aircraft. Reporting also captures any "maintenance down days" each plane had during the reporting month. Reporting is accessed at <https://ntc.cap.af.mil/login.htm>. (After sign-in use the "Form 18 Flight Reporting System" hypertext link.) Each unit maintenance officer must create their own individual user ID and password; SDWG/DOAM then assigns reporting "permissions" to the individual.

B. Within the Wing Management Utilities (WMU) a set of formatted reporting templates grouped under the "Aircraft Manager" utility allows squadron maintenance officers to enter aircraft status changes, maintenance events, and changes in mission equipment aboard those aircraft. This database is accessed via Internet at <http://wmu.nat.cap.gov>. Any CAP member may create a user ID and password; however SDWG/DOAM must obtain "permissions" for each individual before they will be able to make inputs.

-- For South Dakota Wing it is critical that squadrons use the two primary pages within the "Aircraft Manager" utility: The **Update Aircraft Status** page and the **Aircraft Maintenance Form** page. Here's why...

1. NHQ CAP expects its wings to centrally plane, organize, coordinate, direct, and control all maintenance actions on their corporate aircraft.
 - a. But in South Dakota the geographic dispersal of our pilots/aircrews means SDWG also has to geographically disperse its aircraft to achieve the highest possible utilization of those planes.
 - b. Because of the size of the SDWG fleet and the size of this state, total "centralized maintenance management" by the SDWG staff would be unresponsive to a squadron's day-to-day needs... and therefore ineffective.
2. Instead, SDWG relies on decentralized direction and control of maintenance... at the squadron level. SDWG/DOAM can centrally plan, organize, and coordinate maintenance actions for its fleet... but only if it has centralized visibility over its fleet. Reliance on the WMU's Aircraft Manager utilities allows DOAM to make "decentralized maintenance" work.

3. SDWG/DOAM will establish reporting “permissions” for squadron-assigned maintenance officers. Once this is done the squadron may then add, delete, correct, or update the record of maintenance events, or aircraft status, or mission equipment aboard their corporate plane. Obtain a copy of the wing’s **“WMU User’s Guide”**, available for download from the wing Publications web page, for step-by-step instructions to use these WMU utilities.
4. At present there are eight interactive pages available for use within the WMU Aircraft Manager functional area:
 - Update Aircraft Status
 - Aircraft Maintenance Records
 - Aircraft Schedule
 - Generate Monthly Usage Report
 - View Annual Aircraft Usage
 - Monthly Sortie Summary
 - Aircraft Discrepancy Maintenance
 - CAP Form 99 Flight ReleaseOnly four of these pages are of use to a squadron maintenance officer.
5. For the **Update Aircraft Status** page the principal “customer” for such data is an Incident Commander. This utility page provides two kinds of information:
 - a. This utility page first displays a list of each corporate (and, if selected, each registered member-owned) aircraft. It shows the tail number, make/model, home station, “availability” status, notes (specific to each tail number), and the unit maintenance officer point-of-contact information. This info will immediately tell an IC what aircraft are currently available; and allow prompt contact with the unit’s maintenance officer if needed to gain more details.
 - b. At the end of this list is the “Aircraft Detail” template, which allows selection of any tail number in order to display details of that aircraft’s configuration, location, availability status, notes peculiar to that aircraft, and the maintenance officer’s name and contact info, CAPFLT call sign, whether it’s a corporate or member-owned aircraft, type (make/model), aircraft colors, the “owner CAP ID”, the specific mission-related “equipment” aboard that aircraft, and “Aircraft Group” designations. Some explanations are needed...
 - When an aircraft is reported as “grounded” the “Notes” block should address the principal – or pacing – maintenance event which is grounding the aircraft; and provide a date for its estimated return-to- service (RTS). (This block can also be used to alert viewers to any other features unique to this aircraft... such as temporary parking

locations, alternate points of contact, mission of flight restrictions, etc.)

- The “Reimbursement Group” block is a ‘left-over’ from a time when a plane’s flight charge was dictated by its horsepower. This measurement was deleted by a recent change to CAPR 173-3.
- The “Owner CAP ID” block is critical. Unless the ID number entered in this block matches the ID of whomever logged into the WMU Aircraft Manager utilities, the WMU will not accept any data inputs.
- The “Equipment” section allows you to check all mission equipment items which are available with this aircraft.
- The “Aircraft Group” identifies which CAP aircraft grouping applies –
- which establishes pilot qualifications needed to schedule this plane.

6. Next, the **Aircraft Maintenance Record** page. The principal customer for this page is YOU... the squadron maintenance officer. But DOAM is a close second. The purpose of this utility is to provide ready tracking and forecasting of all the recurring maintenance events which CAP requires you to accomplish. The software which supports this page takes the dates and tach readings you load, then displays accumulated calendar time and operating time for the various events. This utility is designed to give visibility to upcoming maintenance events. A recent “remove” feature was added to make the last 20 archived data entries accessible for correction.

- a. Correct display of accumulated time (calendar or tach hour) depends on two inputs by the maintenance officer:
 - (1) The “Tach Time Synchronization” fields must be filled in completely for this utility to work – contrary to the instructions offered at the bottom of that page. Without a beginning date and tach reading, the software doesn’t have a starting point from which to begin counting elapsed time for any of the maintenance events.
 - (2) Accumulated time displays are measured against the “Most Current Tach Date” and “Last Tach Reading” inputs near the top of this page. Update these entries only when you have need to update some other maintenance event elsewhere in this page. (On a day-to-day basis, mission closeouts in WMIRS will automatically fold over ending date & tach readings for each tail number into this WMU utility.)
- b. The software supporting this page is rudimentary; and has led to several peculiarities which will force you to “game” some of the entries in order to get correct results.
 - (1) The software doesn’t know that accomplishment of an Annual inspection “resets the clock” on the next-due 100-hour inspection and mid-cycle oil change. To help this

utility help you track these events properly, you have to also enter the just-completed Annual's date/tach info to the 100-hour and mid-cycle oil change event data fields. Only then will this page project the "next due" 100-hour inspection and mid-cycle oil change info correctly.

- (2) The software doesn't know that accomplishment of a 100-hour inspection drives the tach reading for the next mid-cycle oil change. So you have to enter the same date/tach info from the 100-hour event to the oil change event. Only then will the software project the correct "next due" oil change time.
 - (3) The software also doesn't know that an engine overhaul or replacement entails an oil change. So you have to intercede (to match the mid-cycle event time to the engine change event time) for this utility to correctly project the "next due" oil change.
 - (4) Several calendar events in this page ask for entry of an expiration date rather than an accomplishment date. Those particular events don't follow a fixed interval which The software can count... and therefore project a correct "next due" date.
 - (5) The "Oil Used since 50 Hour" field has no input from this page. Rather, data inputs come from the "Flight Release" utility or WMIRS mission closeout and would be entered by the aircrew.
7. Next, the **CAP Aircraft Scheduler** page. This utility page is designed to allow universal, standardized scheduling of any corporate aircraft by any pilot member, at any time, from any location.
- a. With recent changes to the WMU and advent of WMIRS (described below) for all mission reporting, use of this page is now mandatory for all corporate aircraft – including gliders. If a pilot wants to get a flight release... they must schedule through this utility.
 - b. Squadron maintenance officers need to use this utility to block out "down time" for planned maintenance events... to 'de-conflict' time needed for scheduled maintenance from pilots who decide they want to go flying at the last minute.
 - c. Only a unit commander can "overwrite" an already-scheduled event.
8. Last, the **Aircraft Maintenance Discrepancy** page. This utility allows a squadron to record a history of maintenance discrepancies against their aircraft; as well as corrective actions taken.

BUT: SDWG doesn't expect squadrons to feed data to this utility because DOAM has not created any guidelines which would standardize the kinds of maintenance discrepancies to enter. DOAM has no plans to implement such guidelines at this time.

ALSO: As with any other interactive data collection system, you will still encounter "bugs" in the software applications. If you can't puzzle out a solution – or if you concoct a work-around – let DOAM know. This will alert SDWG staff to the problem. In turn, DOAM will alert the WMU webmaster and work to get a fix.

ALSO: DOAM recognizes that feeding data to the various WMU utilities can be time-consuming... therefore DOAM only requires squadrons to support the "Update Aircraft Status" and "Aircraft Maintenance Record" pages at this time.

C. The **Aircraft Status and Support Resources (ASSR)** report is designed for use by CAP's National Operations Center to readily identify what corporate aircraft are available for mission taskings, where they're located, and what special mission equipment each plane has available. This database receives inputs from two sources:

1. Squadron-level inputs to the WMU "Update Aircraft Status" utility are folded into the ASSR each day.
2. Wing staff (such as SDWG/DO or DOAM) may make direct updates. This report is accessed at <https://ntc.cap.af.mil/security/acstatus.cfm>

D. The **Wing Mission Information Reporting System (WMIRS)** was implemented in response to demands by the Air Force to have access to near-real-time information on AFRCC-tasked missions. NHQ CAP subsequently expanded its use to encompass all CAP-tasked missions as well as local (non-CAP mission) flights as well. (WMIRS was recently expanded to track all CAP glider flights as well.) This utility is accessed at <https://ntc.cap.af.mil/security/wmirs.cfm>.

NOTE: As a by-product (for squadron maintenance officers) when a WMIRS-tracked mission is closed out, a corporate tail number's ending tach reading is automatically updated to the WMU's Aircraft Maintenance Record page.

E. CAP developed its **Corporate Asset Tracking System (CATS)** interactive records pages to convert its mountain of paper inventory records to electronic records for aircraft, vehicles, communications equipment, computers & office equipment, and real property. Access is through CAP's e-Services utility, but only for those members with "restricted access" privileges for caTS.

1. Aircraft-related transaction pages are used only to track a tail number's permanent assignment (by unit charter) and engine & propeller end items.

Inputs are made from the CAP Form 37A; and access is allowed only at wing-level or higher.

2. As a consequence, even though CAPR 67-1, Chapter 3 tasks the “losing” unit to create a “transfer” Form 37A or the “owning” unit to create an “update” Form 37A (for changes to installed equipment)... these tasks now fall on SDWG/DOAM to generate the forms because only wing-level staff have access to the interactive formats.

...And South Dakota Wing's contribution:

F. As a result of CAP's initiative to convert all its wings to “central banking”, SDWG had to develop an Internet-accessible reporting system to generate, track, manage, and control aircraft-related minor maintenance expenditures. NHQ CAP left the form and function of such tracking systems to individual wings. SDWG adopted an already-proven design from VAWG and labeled it the **Aircraft Purchase Order (ACPO)** system. Its workings are addressed in more detail in SDWGG 66-3. The ACPO can be accessed through the wing's restricted access web page.

(Although CAP has developed several other computer-based and Internet-accessed systems, these are not germane to aircraft maintenance and are therefore not addressed in this Guide.)

X. QUICK REFERENCE GUIDES

As a new Aircraft Maintenance Officer, why try to “reinvent the wheel” when other maintenance officers before you have already dug through all the publications for answers? And made all the mistakes?

The following **Quick Reference Guides** were put together over several years to provide quick ‘recipes for success’ at the more common, recurring tasks which a squadron-level maintenance officer must accomplish...

#1. Recurring Squadron Administrative Tasks

- There will always be ‘paperwork’. This spreadsheet will give you “To Do” list of tasks, their intervals, and the ability to load ‘next due’ dates as reminders.

#2. 100-hour & Mid-Cycle Oil Change Tasks

- These are ‘prompts’ to help the squadron prepare for, assist during, and complete the records for these recurring maintenance events.

#3. Annual Inspection Tasks

- Another set of ‘prompts’ to help make an Annual go smoother.

#4. Operating Supplements

- This is a list of basic operating supplements required by

FARs to be part of your plane's Airplane Flight Manual. See if they apply to the equipment found in your aircraft.

#5. New Aircraft Acceptance Tasks

- If your squadron is blessed with a factory pick-up this set of prompts will help make sure your aircrew arrives prepared and brings back everything they're supposed to from the factory.

#6. Aircraft Transfer/Beddown Tasks

- Planes get moved. If you will be receiving someone else's plane, this set of prompts will help insure you get everything done to bed down a 'new' tail number.

#7. Aircraft Mishap -- Required Maintenance Actions

- Planes get damaged. This is a "quick reference" to the manufacturer's publications that tell us what can be repaired, what should be repaired, and what can be 'continued in service'.

They can save you a lot of time and effort.

QUICK REFERENCE GUIDE #1

QUICK REFERENCE GUIDE #1:														
RECURRING MAINTENANCE TASKS & REPORTS												N		
REQUIREMENT:	FREQ	NEXT DUE	NEXT DUE	NEXT DUE	NEXT DUE	NEXT DUE	NEXT DUE	NEXT DUE	NEXT DUE	NEXT DUE	NEXT DUE	NEXT DUE	NEXT DUE	NEXT DUE
Update the CAP Form 37A "Aircraft Shipping/Receiving"	as required	(submit "update" form only when items are added/deleted) (to CAWG/DOAM)												
Submit "Major Maint" Request via CAWG/DOAM	as required	(submit for those actions listed in CAPR 66-1, para 12.a) (to CAWG/DOAM via fax, using CAPForm 176)												
Submit CAWG Form 52 "Corp Acft Flight Charges"	as required	(report is submitted only when unit changes their "flight charge" rate) (to CAWG/DOAM, info copy to Group)												
Create Aircraft Purchase Order (ACPO) control number	as required	(create an ACPO prior to committing to maintenance work) (CAWG/DOAM and FM receive automatic notifications when created or revised or cancelled) (final invoice is transmitted to CAWG/FM)												
Submit CAWG Form 66 "Storage & Mooring Report"	as required	(submit whenever aircraft parking location or mooring method changes) (to CAWG/DOAM; info copy to Group)												
Pull Flight Log forms from the Aircraft Information File (binder)	monthly	(remove completed flight entries; store at unit for 3 years) (distribution no longer required) (retain "deferred" maintenance discrepancy pages until all items cleared; retain in unit for 3 years)												
Update maintenance due dates/times to the AIF cover sheet form	as required	(there is no requirement to retain the superceded worksheets)												
Input flight hours to NHQ CAP via electronic Form 18 (https://ntc.cap.af.mil/login.htm) (requires user ID & password)	monthly	2008:												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
		2009:												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Transfer "nonreimbursed" flight charge revenues to CAWG/FM via deposit slips and CAWG Form 1	monthly	2008:												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
		2009:												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Update WMU Aircraft Status page	as required	(input changes ("operational" vs "grounded") as changes occur; include estimated Return to Service (RTS) date when known)												
Update WMU Maintenance Record Page	as required	(input changes as maintenance events are completed)												
Revised:	1 Apr 08													
OPR:	CAWG/DOAM													

(DOAM can provide the actual Excel file upon request, if you wish to tailor this spreadsheet to your squadron's specific tasks.)

QUICK REFERENCE GUIDE #2

PART 1:

100-HOUR INSPECTION (TASKS TO CONSIDER)

1. Identify the vendor who will do the inspection
2. *Establish date of input and duration; create an ACPO for the estimated costs
3. If other "opportunistic" maintenance is planned, provide vendor with your "shopping list"; establish who will provide required parts
4. *Identify repair sources needed for any "off-aircraft" (component) work
5. Coordinate the down time: Squadron aircrews
Group and Wing (via WMU)
6. If aircraft has to be delivered to another airport, arrange for delivery and return transportation
7. *Prior to input, remove loose equipment from aircraft
8. *Prior to input, clean/wash aircraft
9. Provide agreed-upon parts or materials to vendor
10. *Show aircraft "down for maintenance" in WMU Aircraft Status page
11. Take SOAP sample and mail out
12. *Insure compression checks are performed
13. Open and inspect oil filter for particles
14. Examine spark plugs for condition; determine if plugs need to be replaced
15. *Assist with opening panels, removing seats/carpets (if able)
16. *Clean aircraft structure (as opportunity allows around the inspection)
17. *Insure AMT accomplishes known ADs and/or SBs
18. *Examine loose equipment items removed for aircraft inspection
Check for condition; clean if needed;
Repair, replenish, replace items as needed;
Check "shelf-life" items for expiration (batteries, water packets)
19. Assist with reassembly
20. *Load and stow loose equipment
21. If needed, arrange aircraft return to home station
22. Insure maintenance logbooks are properly documented;
*if parts were installed obtain "serviceable" papers for each part
23. Review invoice(s) for completeness and costs; verify billing does not charge ca sales tax
24. Obtain final invoice and arrange to forward to SDWG/FM for payment
25. Update aircraft status in WMU Aircraft Status page; update completed maintenance events in WMU Maintenance Record page
26. *Return-ship any reparable ("core") components to source
27. Submit paid invoices for reimbursement

QUICK REFERENCE GUIDE #2**PART 2:****MID-CYCLE OIL CHANGE (TASKS TO CONSIDER)**

1. Identify the vendor who will do the oil change
2. Establish date of input; create an ACPO for the estimated costs
3. If other "opportune" maintenance is planned, provide vendor with your "shopping list"; establish who will provide required parts
4. Coordinate the down time: Squadron aircrews
Group and Wing (via WMU)
5. If aircraft has to be delivered to another airport, arrange for delivery and return
6. Provide agreed-upon parts or materials/supplies to vendor
7. Take SOAP sample and mail out
8. Open and inspect oil filter for particles
9. Assist with cowling removals(if able)
10. Clean engine compartment (if opportune)
11. Examine spark plugs for condition; determine if plugs need to be replaced
12. Assist with reassembly (if able)
13. If needed, arrange aircraft return to home station
14. Insure maintenance logbooks are properly documented
15. Review invoice for completeness and costs; verify billing does not charge ca sales tax
16. Submit final invoice to SDWG/FM for payment
17. Update aircraft status in WMU (if grounded prior); update completed maintenance events in WMU Maintenance Record page

Updated: 8 Nov 07

QUICK REFERENCE GUIDE #3

ANNUAL INSPECTION (TASKS TO CONSIDER)

1. Identify the vendor/facility which will do the inspection
2. Establish date of input and duration
3. If other "opportune" maintenance is planned, provide vendor with your "shopping list"; establish who will provide required parts or materials
4. Identify repair shops needed for any "off-aircraft" (component) work
5. Coordinate the down time: Squadron aircrews
Group and Wing (via WMU)
6. If aircraft has to be delivered to another airport, arrange for delivery and return
7. Prior to input, remove loose equipment from aircraft
8. Prior to input, clean/wash aircraft
9. Provide agreed-upon parts or materials to vendor
10. Show aircraft "down for maintenance" in WMU Aircraft Status page
11. Take SOAP sample and mail out
12. Open and inspect oil filter for particles
13. Assist with opening panels, removing seats/carpets, fairings, wheel pants
14. Clean aircraft structure (as opportunity allows around the inspection)
15. **Consider applying corrosion preventive (ACF-50) as "opportune" work
16. Insure AMT accomplishes known ADs and/or SBs
17. **Require an "AD compliance search" be performed and printed out
18. Examine loose equipment items removed for aircraft inspection
Check for condition; clean/laundry if needed;
Repair, replenish, replace items as needed;
Check "shelf-life" items for expiration (batteries, water packets)
19. **This is also a good opportunity to get visual inspection or hydrostatic tests performed on fire extinguisher and/or oxygen cylinder
20. Assist with reassembly (if able)
21. Load and stow loose equipment
22. If needed, arrange aircraft return to home station
23. Insure maintenance logbooks are properly documented;
if parts were installed obtain "serviceable" tags for each part
24. Review invoice(s) for completeness and costs; verify billing does not charge ca sales tax; submit to SDWG/FM for payment
25. Update aircraft status in WMU Aircraft Status page; update completed maintenance events in WMU Maintenance Record page
26. Return-ship any reparable ("core") components back to source

Updated: 8 Nov 07

QUICK REFERENCE GUIDE #4

CAP AIRCRAFT: OPERATING SUPPLEMENTS

CAP/IG “crosstell” reports from Compliance Inspections are full of findings that individual Aircraft Flight Manuals do not contain required operating supplements. As a result, the CAP Commander issued a Policy Memorandum dated 6 May 04 which says THIS IS IMPORTANT! This is the **Third Edition** of known operating supplements which may be required for your aircraft:

ALL CESSNAs

Airplane Flight Manual Supplement, 17 Dec 07 (this is the Secondary Seat Stop mechanism on the pilot-side seat)
Pilot Safety & Warning Supplements, 1 Jun 98

INDIVIDUAL MANUFACTURER (IF their equipment is installed in your plane)

(**BAS Inc**) Owner’s Supplement
(BAS Report #13xx for inertia reel harnesses, by make & model)
(**Precise Flight Inc**) Flight Manual Supplement (Appendix to AD #99-24-10)
by make & model for SVS III standby vacuum system
(**P S Engineering**) Intercom System/Audio Panel Operation Manual
(Item nbr depends on model...PM500, PM1000/II, PMA7000M-S)
(**Iceman Aviation Supplies**) Pilot’s Guide: Ice Detector
(**Nelson Aircraft Inc**) Model A-3 In-Line Oxymizer Flowmeter
(**Aero-Safe Corp**) Model Guardian I secondary vacuum system preflight & operating checklist
(**Northern Airborne Technologies Ltd**) NPX-138 Operating Manual
(**Technisonic Industries Ltd**) TDFM-136 Operating Manual
(**UPSAT**) GX-55 or GX-60 GPS Operating Manual
(**Becker Avionics**) SAR-DF-517 User Manual
(**SAGEM Avionics**) RCOM-100 Satellite Digital Imaging System Operating Manual

STC HOLDERS

Various operating supplements are required depending on the nature of the alteration. DOAM will publish a supplemental listing of STCs by tail number, as a guide to insuring each aircraft has the supplemental operating instructions required by each STC. **IF YOU KNOW OF OTHER ADDED EQUIPMENT OR ALTERATIONS... LET DOAM KNOW!**

Updated: 1 Aug 07

QUICK REFERENCE GUIDE #5

(SDWG AIRCRAFT ACCEPTANCE – PROMPTS)

AIRCRAFT INFO: MAKE/MODEL C-182T TAIL NBR _____**PICKUP LOCATION:** CESSNA FACTORY @ INDEPENDENCE KS

FACTORY POINT-OF-CONTACT: Mr. Lance Gaertner (Contracts Officer)
(620) 332-0540 or lgaertner@cessna.com
CAP/LGM POINT-OF-CONTACT: Mr. Nelson Daniel (Aircraft Manager)
(334) 953-6032 or
Mr. Paul Skinner (Aircraft Technician)
(334) 953-5427

VERIFY FOLLOWING ITEMS ARE PROVIDED...**DOCUMENTATION:**

TEMP REGISTRATION CERTIFICATE _____
AIRWORTHINESS CERTIFICATE _____
WEIGHT & BALANCE DOCUMENT _____
AIRPLANE FLIGHT MANUAL _____
ANY OPERATING SUPPLEMENTS _____
LYCOMING INSTRUCTION FOR ENGINE WEAR-IN _____
AIRFRAME MAINTENANCE LOGBOOK _____
LIST OF ACCOMPLISHED SBs AND ADs _____
POWERPLANT MAINTENANCE LOGBOOK _____
PROPELLER MAINTENANCE LOGBOOK _____
RADIO/AVIONICS LOGBOOK (OPTIONAL) _____
G1000 “INSTRUCTIONS FOR CONTINUED AIRWORTHINESS” _____
OPERATING HANDBOOKS/MANUALS FOR INSTALLED AVIONICS:
G1000 AVIONICS SUITE _____
CAP FM RADIO _____
BECKER ADF-517 _____
DUAL AUDIO PANELS _____
GPS _____

EQUIPMENT ITEMS:**FACTORY-FURNISHED:**

AIRCRAFT DOOR & IGNITION KEYS _____
WINDSCREEN COVERS _____
(may have to be provided after-the-fact by SDWG)
PITOT PROBE COVER _____
ENGINE INLET PLUGS _____
GUST LOCK _____
GROUND POWER UNIT _____ (may affect weight & balance)

CAPR 60-1 REQUIRED ITEMS:

AIRCRAFT INFORMATION FILE _____
SURVIVAL KIT _____

CAPR 66-1 REQUIRED ITEMS:

SHOULDER HARNESSES _____
FIRE EXTINGUISHER _____
AVIONICS/THROTTLE CONTROL LOCK (N/A)
CARGO TIEDOWNS or NET _____
CARBON MONOXIDE DETECTOR _____

CAP RESTRICTIVE PLACARDS IN CABIN:

PROPERTY OF CAP... NOT FOR HIRE OR REWARD" _____
"MAXIMUM CROSSWIND" _____
"SEAT SLIP WARNING" _____
"NO SMOKING" _____

CAP DECALS INSTALLED:

UPPER/LOWER WINGS _____ (CAP/STARS & BARS)
DOOR EMBLEMS _____
VERTICAL FIN _____

SUGGESTED AIRCREW PERSONAL EQUIPMENT:

CLOTHING SUITABLE FOR WEATHER / TERRAIN
INDIVIDUAL SURVIVAL VEST or KIT
INDIVIDUAL HEADSET, FLASHLIGHT
ALL APPROPRIATE A/FDs AND SECTIONAL CHARTS

FACTORY ORIENTATION / FAMILIARIZATION FLIGHT:

CLASSROOM/FLIGHT FAM: Class training not scheduled for this pickup.

RECOMMENDATION: Spend some time in close proximity to airfield
to satisfy yourselves the engine and systems are behaving as advertised.

INITIAL ENGINE WEAR-IN CONSIDERATIONS (LYCOMING IO-540):

ENGINE TO BE SERVICED WITH STRAIGHT MINERAL OIL
FOR FIRST 50 TACH HOURS

EXPECT HIGH CONSUMPTION DURING INITIAL TEN HOURS
-- RECOMMEND CARRYING SPARE QUARTS WITH AIRCRAFT
INITIAL OIL CHANGE DUE AT APPROXIMATELY TEN HOURS
-- FILTER MUST BE EXAMINED FOR UNUSUAL WEAR
-- NO SOAP SAMPLE REQUIRED DURING WEAR-IN PERIOD

OTHER OBSERVATIONS/COMMENTS?

SDWG/DOV/DOAM

20 Oct 07

INITIAL BEDDOWN FOR GAINED AIRCRAFT						(WORKSHEET)
QUICK REFERENCE GUIDE #6						Version: 2
pg 1 of 3						
ITEM	TASK	(Responsible agency/person in parentheses)				COMPLETED
I.	PRIOR COORDINATION					
A.	Confirm unit of assignment (Wing, Group) and airfield of assignment (Group, Sqdn)					
#1	Arrange parking location / tiedown agreement (Sqdn)					
#2	Establish source(s) for fuel / maintenance / parts / washrack (Sqdn)					
#3	Assign Maintenance Officer(s) on a PA (Sqdn)					
a.	Download <i>Handbook for Squadron Maintenance Officers</i>					
b.	Download <i>Guide-to-Aircraft-Maintenance-Funds</i> (removed for revision)					
#4	Establish authorizations for: WMU utilities access (Wing) CAF CAP Form 18 access (member)					
B.	Establish Aircraft Accounts (Wing)					
#1	Aircraft Minor Maintenance account (Wing)					
#2	Unit Aircraft (O & M) account (Wing)					
#3	Arrange "start-up" funds to gaining unit (Wing)					
#4	Retrieve or reallocate aircraft account balance(s) if losing an aircraft (Wing)					
#5	Establish 'unfunded mission' flight charge rate (Sqdn)					
C.	Establish operational controls (Wing) (Sqdn)					
#1	Schedule pilot/aircrew checkouts (Sqdn)					
#2	Qualify and designate Flight Release Officers (Sqdn) (Group)					
#3	Establish any local area procedures (Sqdn)					
#4	Establish aircraft scheduling procedures (Sqdn) (Group)					

pg 2 of 3	ITEM	TASK	(Responsible agency/person in parentheses)	COMPLETED
II.		INITIAL BEDDOWN		
A.		Arrange aircraft pickup (Sqdn) or delivery (Wing) -- Obtain aircraft keysets; obtain padlocks as needed		
B.		Run acceptance inspections and inventories (Wing) (Sqdn)		
#1		Aircraft condition -- CAP Form 71 (Wing or as designated)		
#2		CAP-required decals and cockpit placards (Sqdn)		
#3		CAP-required equipment (CAPR 66-1, para 11.) (Sqdn)		
#4		FAR-required maintenance documents (Sqdn) -- Airframe, Powerplant, Propeller, Avionics maintenance logbooks -- Airworthiness Certificate, Registration, Weight & Balance documents -- Aircraft Flight Manual/Pilot Operating Handbook, all Operating Supp's -- FAA Forms 337, <i>Record of Alteration</i> -- any Supplemental Type Certificates / Operating Supplements		
#5		Manufacturer installation/operating manuals: -- VHF nav/com, DME, transponder, ADF, GPS (or PFD & MFD) -- audio panel / intercom, CAP FM radio, DF equipment -- graphic displays (engine monitor, CHT/EGT, fuel flow, clock, etc.) -- pulselights, standby vacuum system, secondary seat stop, etc.		
#6		CAP-directed modifications: Rosen sunvisors, avionics control lock		
#7		Wing-tasked equipment: Nelson Oxyrack & flowmeters, headsets (optional)		
#8		GPS Flybrary datacard updates (or GPS subscription & card reader) (Wing)		
C.		Acquire ground support items: (Sqdn) -- aircraft covers, engine inlet plugs, pitot probe cover, tiedowns, chocks -- step ladder (if required), calibrated dipstick, fuel sampling/GATS jar -- spare length of RG-58 coaxial cable (for ARI/SSTV antenna hookup)		
D.		Confirm FM radio is programmed with CAWG frequencies (Sqdn)		
E.		Any other tasks/projects unique to unit of assignment.		

[illegible]

(DOAM can provide the full Excel file upon request.)

QUICK REFERENCE GUIDE #7

AIRCRAFT MISHAPS

-- WHAT MAINTENANCE ACTIONS ARE REQUIRED?

CONTENT:

STRUCTURAL DAMAGE OBSERVED OR SUSPECTED

- A. To Landing Gear
- B. To Fuselage Structure
- C. To Wing Structure
- D. To Primary Flight Controls
- E. To Windscreen/Windows
- F. Lightning Strike
- G. Bird Strike
- H. Corrosion

ENGINE MALFUNCTION OBSERVED OR SUSPECTED

- A. Oil Contamination
- B. Metal in Filter
- C. Fuel Contamination
- D. Engine Detonation
- E. Overspeed
- F. Overtemp (Oil) (CHT)
- G. Fire in Compartment
- H. Prop Strike/Sudden Stoppage/Loss of Prop Blade or Tip
- I. Lightning Strike

PROPELLER DAMAGE OBSERVED OR SUSPECTED

- A. Object Striking Stationary Prop Blade
- B. Blade Strike by Rotating Propeller
- C. Sudden Engine Stoppage
- D. Abnormal Vibration
- E. Grease Leakage (Hub)
- F. Bird Strike

PROP GOVERNOR MALFUNCTION OBSERVED OR SUSPECTED

- A. Oil Contamination
- B. Engine Detonation
- C. Engine Overspeed
- D. Bird Strike

(Page 1 of 7)

1. STRUCTURAL DAMAGE OBSERVED OR SUSPECTED

A. TO LANDING GEAR

- (1) Main landing gear, nose landing gear shock strut/torque links/shimmy damper:
 - Allowable repairs or replacement is addressed in the Cessna service manuals, Sec 5 (C-182 and CU206).
- (2) Wheel components (nose and/or main):
 - Allowable repair/replacement is addressed in Sec 5 (C-182 and CU206) of the Cessna service manuals.
- (3) Brake components:
 - Inspection/repair/reassembly is addressed in Sec 5 (C-182 and CU206) of the Cessna service manuals.

B. TO FUSELAGE STRUCTURE

- (1) Fuselage skin, bulkheads, firewall, engine cowlings:
 - (a) Cessna service manuals, Sec 18 (C-182 and CU206) detail what is “negligible damage”, “repairable damage”, or “damage necessitating replacement of parts” for each area.
 - (b) Hard landings are detailed specifically in paragraph 18-64 (C-182 manual) or 18-68 (CU206 manual).
 - (c) Firewall damage is detailed specifically in paragraph 18-65 (C-182 manual) or 18-69 (CU206 manual).
- (2) Engine mount structures:
 - (a) For the C-182, Sec 18, para 18-66 through 18-71 address allowable repairs to the mount support cradle, mounting lugs, or mount-to-fuselage attach fittings.
 - (b) Additionally, Sec 19, para 19-14 spells out the paint refinish required of engine mounts.
 - (c) For the CU206 you have to refer to the general fuselage structure of Sec 18 for “negligible”, “repairable”, and “damage necessitating replacement of parts” criteria.

C. TO WING STRUCTURE

- (1) For wing skin, stringers, ribs, primary spars, auxiliary spars, and leading edges see Cessna service manual Sec 18 (C-182 and CU206) for damage criteria and repair limits.
- (2) For vertical fin and horizontal stab structures see Sec 18 (C-182 and CU206) for “negligible”, “repairable”, and “damage necessitating replacement of parts” criteria.

D. TO PRIMARY FLIGHT CONTROLS

Ailerons, elevators, and rudder structures:

- (a) See the Cessna service manual, Sec 18 (C-182 and CU206) for damage criteria and repair limits on structures.
- (b) For suspected damage to flight control cables, bellcranks, or other controlling features see the separate service manual sections...

Sec 6 "Aileron Control System" (C-182 and CU206)

Sec 7 "Wing flap control system" (both)

Sec 8 "Elevator control system" (both)

Sec 9 "Elevator trim tab control system" (both)

Sec 10 "Rudder control system" (CU206 only)

E. TO WINDSCREEN OR WINDOWS

Repair/replace decisions are addressed in the Cessna service manual, Sec 3, para 3-21 through 3-24 (C-182) or 3-5 through 3-14 (CU206) for damage, scratches, and cracks.

F. SUSPECTED OR APPARENT LIGHTNING STRIKE

- (1) Visible structural damage will be addressed in the service manuals as structural repairs, Sec 18 (C-182 and CU206).
- (2) Additionally, expect to functionally check the aircraft electrical power supply system (battery, alternator, busses, controls) in accordance with Sec 16 (C-182) or Sec 17 (CU206).

G. BIRD STRIKE

Fuselage, wing, or flight control structures will be evaluated as damage using the "negligible", "repairable", and "damage necessitating replacement of parts" criteria in Sec 18 (Structural Repairs) of the C-182 or CU206 service manual.

H. CORROSION

Damage caused by corrosion is addressed in general terms in the Cessna service manuals under "Cleaning" instructions in Sec 2 (C-182 and CU206). It is also addressed as part of the individual structures in Sec 18 "Structural Repairs" (C-182 and CU206).

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2. ENGINE MALFUNCTION OBSERVED OR SUSPECTED

A. OIL CONTAMINATION

- (1) Other products (avgas, preservative oils, solvents, water, sludge, fabric) are addressed in either the Teledyne Continental Motors (TCM) or Lycoming overhaul and service manuals.
- (2) In-the-field actions are limited to drain and flush oil system, drain and flush oil cooler, replace oil filter.

B. METAL IN OIL FILTER

- (1) Any particulate matter (metallic or nonmetallic) observed in the oil filter element may be evaluated on (a) abundance of the particles, (b) size and shape of the largest particles, and (c) their magnetic/non-magnetic properties.
- (2) Particle size and abundance will determine the degree of response... from "continue in service" to "continue and reinspect oil filter element in 25 hours" to "continue and reinspect oil filter element in 10 hours" to "resample after static engine run" to "inspect oil pump" to "teardown engine".

C. FUEL CONTAMINATION

- (1) TCM addresses particulate matter or other petroleum products in their service publication M88-10, "Contaminated Fuels".
- (2) In-the-field actions require drain and flush of the fuel system: tanks, lines, fuel filter, gascolator, carburetor.

D. ENGINE DETONATION

This condition is not addressed as a discrete subject in either TCM or Lycoming service publications. Oblique references to this condition in the Cessna service manuals suggest the following actions, as a minimum:

- (a) Visual inspection of intake and exhaust valves, and cylinder security to the crankcase.
- (b) If damage is seen... further teardown is warranted to inspect the piston connecting rods and crankshaft. This will require teardown through a certificated repair station.

E. ENGINE OVERSPEED

- (1) Both TCM and Lycoming address the investigating actions that are required.
 - (a) TCM M89-15 addresses "Overspeed Limitations" and consequent investigation.
 - (b) Lycoming SB-369 addresses "Engine Inspection After Overspeed or Overboost."
- (2) Further, the Cessna service manuals, Sec 2, para 2-51 Note #3 (C-182) and para 2-55, Note #3 (CU206) require the magnetos be overhauled when an engine is subject to an overspeed condition.

F. ENGINE OVERTEMPS

- (1) From Cylinder Head Temperature indication:
 - (a) TCM recommends inspection of exhaust valves (service pub M87-8) and boroscope of the cylinder barrels (M91-6).
 - (b) Lycoming apparently has no corresponding service publication.
- (2) From Oil Temperature indication:

Neither Cessna service manual (C-182 or CU206) address excessive oil temperature as a discrete topic. Oil manufacturers -- in their product specification sheets -- will spell out a requirement to replace the oil if it exceeds designed operating temperatures, due to loss of viscosity from "cracking" of the "long-chain" hydrocarbon molecules.

G. FIRE IN ENGINE COMPARTMENT

Inspect all exterior engine components and accessories for Damage using the Cessna service manual, Sec 2 "Inspection Time Limits" criteria (C-182 and CU206).

H. PROP STRIKE/SUDDEN ENGINE STOPPAGE/LOSS OF PROP BLADE OR TIP

- (1) TCM addresses requirements for inspection and repair of its engines in publication SB96-11, "Propeller Strikes and Hydraulic Locks".
- (2) Lycoming addresses requirements for its engines in publication SB-533A, "Recommendations Regarding Accidental Engine Stoppage, Propeller/Rotor Strike, or Loss of Propeller/Rotor Blade or Tip".
- (3) The Cessna service manuals Sec 2, para 2-51 (C-182) or para 2-55 (CU206), Note #3 also require the magnetos be overhauled when the engine is subject to "sudden stoppage".

I. LIGHTNING STRIKE

TCM offers inspection actions in its service publication M88-9, "Lighting Strikes".

3. PROPELLER DAMAGE OBSERVED OR SUSPECTED

A. OBJECT STRIKING STATIONARY PROP BLADE

B. BLADE STRIKE BY ROTATING PROPELLER

C. SUDDEN ENGINE STOPPAGE

- (1) Mccauley service publication SB 176 addresses "minor repair" versus "major repair" criteria for each condition above; and spells out what minor repairs are authorized versus repair/overhaul requiring a certificated repair station (overhaul facility).
- (2) Hartzell does not offer a corresponding service publication for its props.

D. ABNORMAL VIBRATION

E. GREASE LEAKAGE AT HUB

- (1) Hartzell addresses both above conditions (and required actions) in their service publication HC-SL-61-165.
- (2) Mccauley apparently does not offer a corresponding service publication for its prop assemblies.

4. PROP GOVERNOR MALFUNCTION OBSERVED OR SUSPECTED

A. OIL CONTAMINATION

- (1) Mccauley addresses inspection and overhaul requirements in their service publication SB 215, "Governors Exposed to a Strike, Engine Detonation, or Oil Contamination".
- (2) Hartzell and Woodward apparently offer no corresponding service publications for this condition.

B. ENGINE DETONATION

Also addressed by Mccauley in its SB 215.

C. ENGINE OVERSPEED

This is not addressed as a discreet topic in any Mccauley or Hartzell service publications.

D. BIRD STRIKE

- (1) Also addressed by Mccauley in their SB 176 for their governors.
- (2) Apparently not addressed as a discreet topic by Hartzell for their governors.

E. PROP STRIKE OR SUDDEN ENGINE STOPPAGE

This is not addressed as a discreet discrepancy in any Mccauley or Hartzell service publications.

Quick Reference # - SDWG Squadron Maintenance Officers

Sioux Falls Composite Squadron

Bart Trevillyan

605-201-3840

btrevillyan@yahoo.com

Crazy Horse Composite Squadron

Richard Getting

Eagle2soar@me.com

Spearfish Composite Squadron

Buck Deweese

C: 605-641-2362

deweese@rushmore.com

Pierre Composite Squadron

Jon Becker

jcbecker@pie.midco.net

Rapid City Composite Squadron

Craig Goodrich

C: 605-787-8230

craiggoodrich@earthlink.com

Big Sioux Composite Squadron

E. W. Filler

C: 605-366-3895

ewsuefiller@aol.com

Quick Reference # - Flight District Office

Flight Standard District Office

3501 5th St.

Rapid City, SD 57701

Phone: 605-737-3050

Fax: 605-737-3069

0730-1600 MT M-F

Quick Reference # - Vendors Used by SDWG

L & D Aero Service, Inc.

3900 Airport Road Hgr #5

Rapid City, SD 57703

(605)393-2254

les@lndaero.com

Jetsun Aviation

712-258-6563

Sioux City IA

don@jetsun.com

Skyways Ltd

426 15th St NW

Huron South Dakota 57350

Toll Free 1-800-919-7141
Phone 1-605-352-9262
Fax 1-605-352-6796

Natrona Avionics, LLC
7956 'C' Fuller
Natrona County International Airport
Casper, Wyoming 82604
Phone: 307-577-0770
Fax: 307-577-0772
Email: natavionics@wyoming.com

Quick References # - NHQ Contacts

CAP NHQ contacts for AC MX:

Paul Skinner pskinner@capnhq.gov 334-953-7748 ext 273

Dan Daniel ddaniel@capnhq.gov 334-953-7748 ext 272.

Quick Reference # - AIF

CAPR 66-1
CAPR 20-1
CAPF 176
CAPF 71
CAP AIF CVR